

Bill Becker STAPPA/ALAPCO

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### What I Will Cover

- Menu of Harmonized Options
- Overview of Clean Air and Climate Protection Software
- What-If Scenarios: New York State and Salt Lake City



### STAPPA/ALAPCO Menu of Options for Multi-Pollutant Strategies

- Analyzed Every Economic Sector
  - Utilities
- Res/Com
- TransportationWaste

- IndustrialAgriculture
- Reviewed Market Mechanisms

Modeled Case Studies in Four Areas



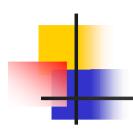
## Information Included for Each Industrial Sector

- Greenhouse Gas and Air Pollution Emissions
- Technology-Based Strategies
- Policy-Based Strategies
- Costs and Cost-Effectiveness
- Experiences and Obstacles
- Market Penetration



### Percent Reduction from Baseline Emissions in Each Case Study Area

Area	SO <sub>2</sub>	NO <sub>x</sub>	PM	VOC	CO	CO <sub>2</sub>
New Hampshire	41%	17%	12%	3%	4%	12%
Atlanta, GA	40%	6%	1%	3%	4%	7%
Louisville, KY	26%	14%	3%	3%	4%	15%
Ventura County, CA	2%	4%	1%	4%	4%	11%



## STAPPA/ALAPCO's Clean Air and Climate Protection Software

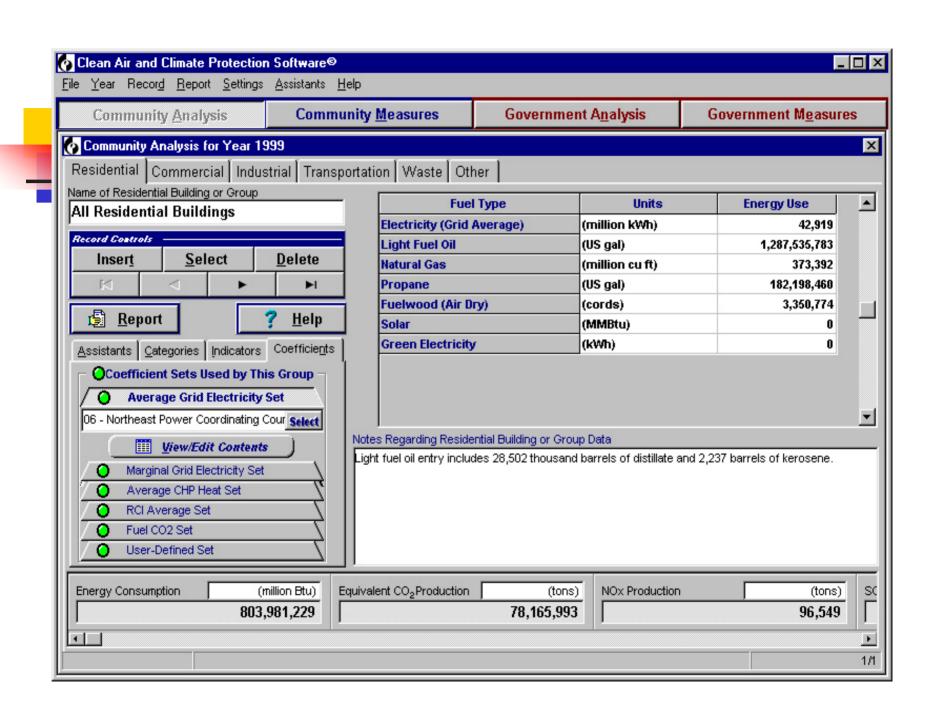
- Strategic Planning Tool with ICLEI
- User Friendly Model Assessing and Quantifying Benefits of Strategies
- Not an Air Quality Model; Not Designed to be Used for Regulatory Compliance Analysis



## **Overview of Software**

- Supports emissions inventory development for all sectors
- Facilitates effective action plans
- Quantifies the emission reductions from measures
- Produces reports detailing emission reductions, measures, cost savings





# New York Community Criteria Air Pollutants Emissions in 1999 Summary Report

	NOx	S0x	CO	VOC	PM10
	(tons)	(tons)	(tons)	(tons)	(tons)
Residential	96,549	150,851	356,872	64,482	65,715
Commercial	105,484	280,897	90,438	14,462	40,897
Industrial	118,821	252,832	418,266	76,310	65,670
Transportation	312,073	16,460	2,167,252	234,073	9,975
Total	632,927	701,039	3,032,828	389,328	182,257

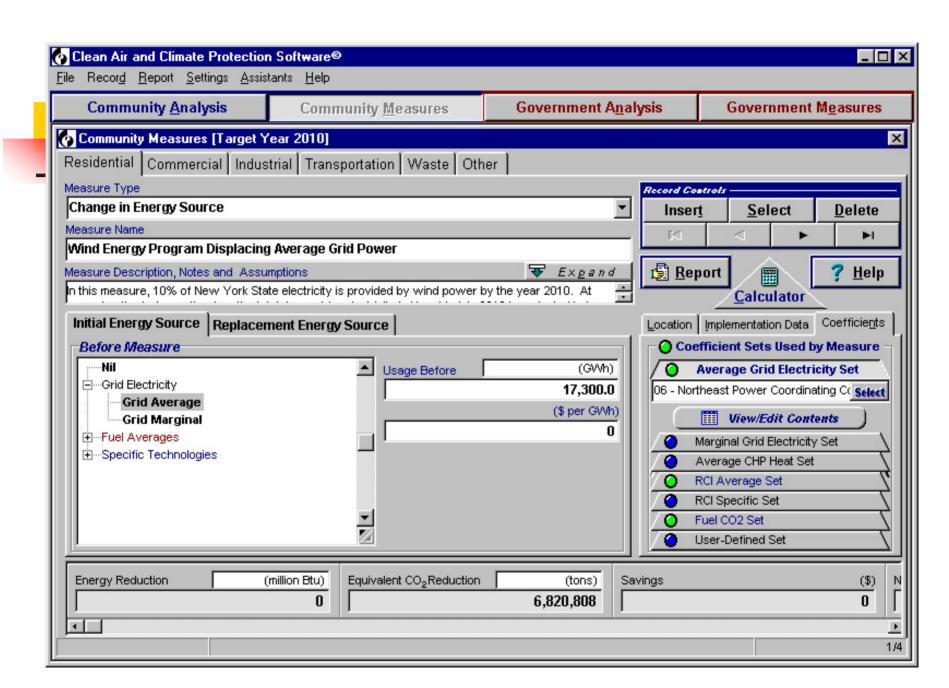
## New York Community Criteria Air Pollutants Emissions in 1999 Report by Source

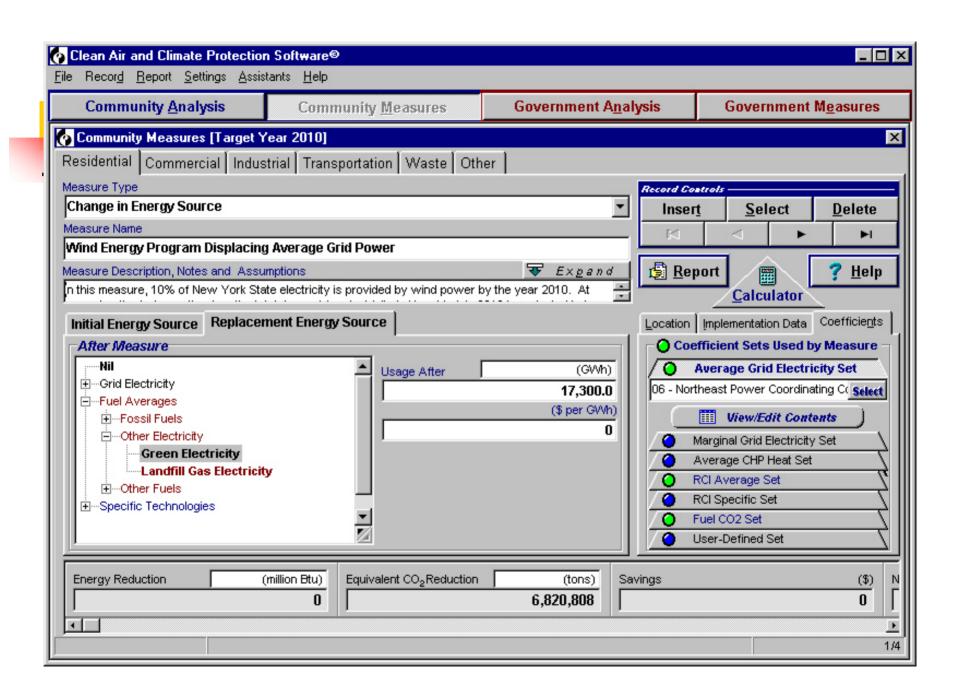
	NOx	S0x	CO	VOC	PM10
<u>u</u>	(tons)	(tons)	(tons)	(tons)	(tons)
CNG	91	2	5,543	111	12
Coal	22,510	57,818	4,776	301	3,447
Diesel	92,458	5,864	49,354	9,912	5,408
Electricity	108,464	432,438	66,519	7,587	62,959
Fuelwood (Air Dry)	8,642	1,210	705,610	130,045	92,039
Gasoline	219,407	10,591	2,105,170	223,905	4,539
Heavy Fuel Oil	14,796	70,245	7,791	1,252	4,236
Light Fuel Oil	55,093	98,872	51,611	10,287	6,024
LPG	117	2	7,185	145	16
Natural Gas	109,152	23,998	28,951	5,712	3,512
Propane	2,195	0	320	72	65
Total	632,927	701,039	3,032,828	389,328	182,257



## Three What-If Scenarios

- New York State
  - Impact of 10 percent switch to wind power in 2010
  - Impact of portfolio of reduction measures for residential sector
- Salt Lake City
  - Impact of reduction measures the city is undertaking (real example)





### **New York State**

- Impact of switching ten percent of electricity demand to wind power in 2010
  - eCO<sub>2</sub> reductions: 6.8 million tons
  - NO<sub>x</sub> reductions: 7,563 tons
  - SO<sub>2</sub> reductions: 23,718 tons
  - CO reductions: 9,757 tons
  - VOC reductions: 1,080 tons
  - PM<sub>10</sub> reductions: 7,162 tons

#### **New York**

#### Community Greenhouse Gas and Air Pollutant Reductions in 2010 Target Year Measures Listing

Residential Sector Location of Measure: New York, New York

Type of Measure: Change in Energy Source

#### Measure Name

Wind Energy Program Displaci	ng Marginal Grid Power				
		Measure	e Details		
Initial Energy Source			Replacement Er	nergy Source	
Electricity			Green Electric	ity	
Usage Before		17,300	Usage After		17,300
Unit		(GWh)	Unit		(GWh)
Price per Unit		\$.00	Price per Unit		\$.00
Ramp-In Factor	Ramp-In Factor 100% Energy Reduction (million Btu)		on (million Btu)	0	
Year Implemented			Emission Reduc	ction (tons eCO2)	6,820,808
Implementation Cost		\$0	Savings (\$/year)	)	\$0
			Payback Period	(years)	0
The emission reduction from th	is measure as a percent	age of tot	al reductions:		100.0%
This emission reduction as a pe	ercentage of emission re	ductions .	required to meet t	arget:	15.6%
NOx Reduction	SOx Reduction	C	O Reduction	VOC Reduction	PM10 Reduction
(tons)	(tons)		(tons)	(tons)	(tons)
7,563	23,718		9,757	1,080	7,162



## New York State: Example of Harmonized Strategy

- Energy Star Lights & Appliances
- Energy Star Homes Oil
- Wind Energy

New York

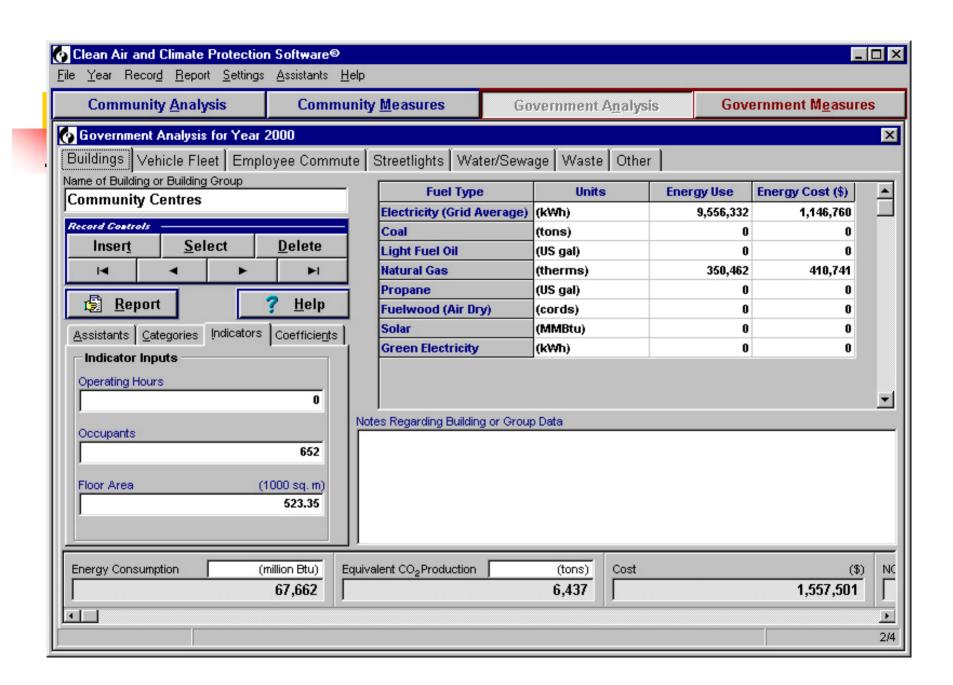
### Community Criteria Air Pollutants Reductions in 2010 Target Year Measures Detailed Report

	NOx (tons)	SOx (tons)	CO (tons)	VOC (tons)	PM10 (tons)
Residential Sector New York					
Energy Efficiency: Buildings					
Energy Star Homes Oil	5,689	17,722	1,149	194	676
New York, New York					
Change in Energy Source					
Wind Energy Program	7,563	23,718	9,757	1,080	7,162
Energy Star Lights and	3,586	11,246	4,627	512	3,396
Subtotal Residential	16,838	52,686	16,013	1,786	11,234
All Measures	16,838	52,686	16,013	1,786	11,234

#### **New York**

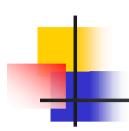
### Community Greenhouse Gas Emissions Reductions in 2010 Target Year Measures Detailed Report

	Equiv CO	Equiv CO	Energy	Energy Cost
	(tons)	(%)	(million Btu)	Savings (\$)
Residential Sector				
New York Energy Efficiency: Buildings				
Energy Star Homes Oil	3,546060	26.0	1,099,920,638	386,190,000
New York Change in Energy Source				
Wind Energy Program	6,820,808	50.1	0	0
Energy Star Lights and Appliances	3,234,216	23.4	27,997,014	1,123,828,125
Subtotal Residential	13,601,084	100.0	1,127,917,652	1,510,018,125
Total	13,601,084	100.0	1,127,917,652	1,510,018,125



## Salt Lake City Measures to Reduce Emissions

Pollution Reduction Measures	Equivalence CO <sub>2</sub> (tons) Reduced	Nox (lbs.)	Sox (lbs.)	CO (lbs.)	VOC (lbs.)	PM <sub>10</sub> (lbs.)
Lighting upgrades	344	795.2	713.1	425	46.9	305.4
Wind power	215	497.5	446.1	265.9	29.3	191
681 LED traffic signals	242	557.7	500.1	298.1	32.9	214.2
Biodiesel fuel for airport fleet	227	-346	112	1,153	118	132
Total 2001	1,028	1,504.4	1,771.3	2,142	227.1	842.6



## For Further Information: www.cleanairworld.org

 Links Every National, State and Local Air Agency in the World, Including Web Addresses, Email and More

 Provides Topical Links on Major Clean Air Issues, Including Climate Change

Address: <u>cleanairworld.org</u>